

PCT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BILL, Kevin
AstraZenaca
Global Intellectual Property
Mereside, Alderley Park
Macclesfield
Cheshire SK10 4GR
ROYAUME-UNI

Date of mailing (day/month/year) 11 August 2000 (11.08.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference PHM 70478/WO	
International application No. PCT/GB00/00357	International filing date (day/month/year) 08 February 2000 (08.02.00)

1. The following indications appeared on record concerning:		
<input checked="" type="checkbox"/> the applicant	<input type="checkbox"/> the inventor	<input type="checkbox"/> the agent
<input type="checkbox"/> the common representative		
Name and Address ASTRAZENECA UK LIMITED 15 Stanhope Gate London W1Y 6LN United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input type="checkbox"/> the person	<input checked="" type="checkbox"/> the name	<input checked="" type="checkbox"/> the address
<input checked="" type="checkbox"/> the nationality	<input checked="" type="checkbox"/> the residence	
Name and Address ASTRAZENECA AB S-151 85 Södertälje Sweden	State of Nationality SE	State of Residence SE
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary:		
4. A copy of this notification has been sent to:		
<input checked="" type="checkbox"/> the receiving Office	<input checked="" type="checkbox"/> the designated Offices concerned	
<input type="checkbox"/> the International Searching Authority	<input type="checkbox"/> the elected Offices concerned	
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Mougamadou ABIDINE Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BILL, Kevin
AstraZenaca
Global Intellectual Property
Mereside, Alderley Park
Macclesfield
Cheshire SK10 4GR
ROYAUME-UNI

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1. The following indications appeared on record concerning:

☐

the applicant

☐

the inventor

☒

the agent

☐

the common representative

Name and Address

BILL, Kevin
Global Intellectual Property
AstraZeneca UK Limited
Mereside, Alderley Park
Macclesfield
Cheshire SK10 4TG
United Kingdom

State of Nationality

State of Residence

Telephone No.

+44 1625 512461

Facsimile No.

+44 1625 583358

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐

the person

☐

the name

☒

the address

☐

the nationality

☐

the residence

Name and Address

BILL, Kevin
AstraZenaca
Global Intellectual Property
Mereside, Alderley Park
Macclesfield
Cheshire SK10 4GR
United Kingdom

State of Nationality

State of Residence

Telephone No.

+44 1625 512461

Facsimile No.

+44 1625 583358

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒

the receiving Office

☐

the International Searching Authority

☐

the International Preliminary Examining Authority

☒

the designated Offices concerned

☐

the elected Offices concerned

☐

other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Mougamadou ABIDINE

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C. 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 04 October 2000 (04.10.00)	Applicant's or agent's file reference PHM 70478/WO
International application No. PCT/GB00/00357	Priority date (day/month/year) 11 February 1999 (11.02.99)
International filing date (day/month/year) 08 February 2000 (08.02.00)	
Applicant LITTLE, Stephen et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
30 August 2000 (30.08.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Zakaria EL KHODARY

Telephone No.: (41-22) 338.83.38

RECEIVED**12 MAY 2000****ASTRA ZENECA PLC
GLOBAL INTELLECTUAL PROPERTY**

PCT/GB00/00357

PATENT COOPERATION TREATY**PCT**

From the INTERNATIONAL BUREAU

**NOTIFICATION OF THE RECORDING
OF A CHANGE**(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

BILL, Kevin
Global Intellectual Property
AstraZeneca UK Limited
Mereside, Alderley Park
Macclesfield
Cheshire SK10 4TG
ROYAUME-UNI

Date of mailing (day/month/year)

05 May 2000 (05.05.00)

Applicant's or agent's file reference

PHM 70478/WO

International application No.

PCT/GB00/00357

International filing date (day/month/year)

08 February 2000 (08.02.00)

IMPORTANT NOTIFICATION

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

ZENECA LIMITED
15 Stanhope Gate
London W1Y 6LN
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

ASTRAZENECA UK LIMITED
15 Stanhope Gate
London W1Y 6LN
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

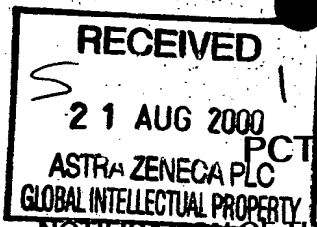
☒ the receiving Office ☐ the designated Offices concerned
☒ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Lazar Joseph Panakal

Telephone No.: (41-22) 338.83.38



NOTIFICATION OF THE RECORDING
OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

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☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address ASTRAZENECA UK LIMITED 15 Stanhope Gate London W1Y 6LN United Kingdom	State of Nationality GB	State of Residence GB
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	Facsimile No.	
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☐ the person ☒ the name ☒ the address ☒ the nationality ☒ the residence

Name and Address ASTRAZENECA AB S-151 85 Södertälje Sweden	State of Nationality SE	State of Residence SE
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:


☒ the receiving Office ☒ the designated Offices concerned
☐ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:


The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Mougamadou ABIDINE Telephone No.: (41-22) 338.83.38
---	--

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PHM 70478/WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)							
International application No. PCT/GB00/00357 <i>OK</i>	International filing date (day/month/year) 08/02/2000 <i>OK</i>	Priority date (day/month/year) 11/02/1999						
International Patent Classification (IPC) or national classification and IPC C12Q1/68								
Applicant ASTRAZENECA AB et al								
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p> <table border="1"><thead><tr><th>CODE</th><th>DATE</th><th>NTD</th></tr></thead><tbody><tr><td></td><td></td><td></td></tr></tbody></table>			CODE	DATE	NTD			
CODE	DATE	NTD						
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none">I <input checked="" type="checkbox"/> Basis of the reportII <input type="checkbox"/> PriorityIII <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicabilityIV <input type="checkbox"/> Lack of unity of inventionV <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statementVI <input type="checkbox"/> Certain documents citedVII <input checked="" type="checkbox"/> Certain defects in the international applicationVIII <input checked="" type="checkbox"/> Certain observations on the international application								
Date of submission of the demand 30/08/2000	Date of completion of this report 22.03.2001							
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Tilkorn, A-C Telephone No. +49 89 2399 8688							



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/00357

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

1-45 as originally filed

Claims, No.:

1-16 as originally filed

Drawings, sheets:

1/4-4/4 as originally filed

Sequence listing part of the description, pages:

1-2, as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☒ contained in the international application in written form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB00/00357

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
☒ claims Nos. 5.

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 5 are so unclear that no meaningful opinion could be formed (*specify*):
see separate sheet
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination report cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

- ☐ the written form has not been furnished or does not comply with the standard.
☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00357

1. Statement

Novelty (N)	Yes:	Claims	3,6-14
	No:	Claims	1,2,4,15,16
Inventive step (IS)	Yes:	Claims	6-14
	No:	Claims	1-4,15,16
Industrial applicability (IA)	Yes:	Claims	1-4,6-16
	No:	Claims	-

2. Citations and explanations **see separate sheet**

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Re Item III

Since there is no sequence information as to the genomic DNA and its origin in **claim 5**, it is impossible for the skilled person to determine the scope of the claim. Hence, claim 5 contravenes Art 5 PCT and no opinion can be formed on novelty, inventiveness and industrial applicability of said claim (Art 34(4)(a)(ii) PCT).

Re Item V

The following documents are referred to in this communication:

D1: WO 97 31256 A
D2: EP-A-0 799 897
D3: WO 93 25563 A

The method according to the present application involves targeting polynucleotides composed of two parts: one part can hybridize to the target molecule and the second part can bind to a capture oligonucleotide which is immobilized on a solid support. The methods rely firstly on the binding of the target molecule comprised in a sample to the targeting polynucleotide and secondly on capturing the hybrid molecule by hybridization with the immobilized capture oligonucleotide. The capture oligonucleotides are arranged in arrays consisting of a plurality of immobilized capture oligonucleotides of different sequences and melting temperatures within a range of 16°C.

1 Novelty (Art 33(2) PCT):

1.1 Claim 1 is not novel in view of each of documents D2 (p 4 l 54-56: capture oligonucleotides at pre-defined positionally distinct sites and p 4 l 35-45) and D3 (p 7 para 3; Example IV: p 14-16).

The same applies to **claims 2** and **4** (D2: p 5 l 1-7; D3: Fig 3).

1.2 Claim 15 is anticipated by each of D1 (D1: claim 138, 145) and D2 (D2: p 5 l 8-14; p 4 l 35-45; claims 23 and 24). D2 also destroys the novelty of **claim 16**.

Instructions for use are not considered to be a technical feature.

- 1.3 **Claim 6** is novel, because none of the available documents describes an assay design embracing targeting polynucleotides and capture oligonucleotides that are immobilized on a solid support.

For the same reason also **claims 7-14** are novel.

2 Inventive Step (Art 33(3) PCT):

- 2.1 **Claim 3** does not appear to satisfy Art 33(3) PCT. Labelling the immobilized capture probes does not appear to solve a problem, because it is not apparent how the discrimination between captured and non captured target sequences can be accomplished (see appl. p 22 I 7-10), when only all the capture oligonucleotides are labelled.

- 2.2 **Claim 6** appears to comply with Art 33(3) PCT for the following reasons:
D1, which is considered to represent the closest prior art, describes a method which involves two targeting oligonucleotides and immobilized capture oligonucleotides. The subject-matter of claim 6 is distinguished from the method of D1 in that according to D1 a ligation step connects a labelled target specific oligonucleotide with an adjacent target-specific oligonucleotide that additionally contains a portion which is complementary to immobilized capture oligonucleotides, whereas the method according to claim 6 obviates the ligation step and provides for the detection by localization of the hybridized targeting oligonucleotide on the solid support.
The problem to be solved by the method of claim 6 can thus be regarded as the provision of an alternative method for detecting the presence or absence of test nucleic acid sequences in a sample.
None of the available documents renders the subject-matter of claim 6 obvious.
Claims 7-9 seem to be inventive, accordingly.

- 2.3 **Claim 10** seems to satisfy Art 33(3) PCT for the following reasons:
D1 is considered to represent the closest prior art.
The subject-matter of claim 10 is distinguished from the disclosure of D1 in that according to claim 10 the detection is accomplished by incorporating a label into the cDNA during reverse transcription. Hence, again, the ligation step as required

for the method of D1 is omitted.

The problem solved by claim 10 can thus be regarded as the provision of an alternative detection method.

None of the available documents seems to render the subject-matter of claim 10 obvious. The same argument applies to the dependent **claims 11-13** and independent **claim 14**.

Re Item VII

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2 and D3 is not mentioned in the description, nor are these documents identified therein.

Re Item VIII

- 1 **Claim 1** does not satisfy Art 6 PCT, because the expression "substantially the same melting temperature" is misleading and renders the scope of the claim unclear. According to the description, "substantially the same melting temperature" is supposed to mean the melting temperature of the average T_m of all immobilized oligonucleotides $\pm 8^\circ\text{C}$ (p 5 I 10-14). This temperature range in the context of specific hybridization experiments does clearly not allow the designation "substantially the same temperature". In order to overcome this objection, the cited explanation given in the description (p 5 I 10-14) should have been incorporated into the claim.
Similarly, independent **claims 6, 10, 14 and 15** need amendment, since the term "substantially" leads to uncertainty as to the scope for which protection is sought.
- 2 **Claim 5** does not satisfy Art 6 PCT, because the scope of the claim is not clearly defined, since it is not clear, as to what "genomic DNA" refers, because no origin of the genomic DNA is given and for most organisms the genomic DNA sequences are not yet known in their entirety.
- 3 **Claim 14** lacks an essential feature and hence does not satisfy Art 6 PCT:
According to the application, the capture oligonucleotides immobilized on the solid support should each possess the same melting temperature (T_m) when

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/00357

hybridized to their complementary sequences in particular where quantitative analyses is required like in the method of claim 14 (see p 25 l 26 - p 26 l 4). As each independent claim should contain all the essential technical features of the invention, said feature should have been introduced into claim 14.

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) PHM 70478/WO

Box No. I TITLE OF INVENTION

NOVEL MATRIX

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

ZENECA Limited
15 Stanhope Gate
London
W1Y 6LN

☐ This person is also inventor.

Telephone No.

+44-1625-516173

Facsimile No.

+44-1625-583358

Teleprinter No.

669095/669388

State (that is, country) of nationality:
GB

State (that is, country) of residence:
GB

This person is applicant
for the purposes of:

☐ all designated
States

☒ all designated States except
the United States of America

☐ the United States
of America only

☐ the States indicated in
the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

LITTLE, Stephen
Gadbrook Park
Northwich
Cheshire GB

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box
is marked, do not fill in below.)

State (that is, country) of nationality:
GB

State (that is, country) of residence:
GB

This person is applicant
for the purposes of:

☐ all designated
States

☐ all designated States except
the United States of America

☒ the United States
of America only

☐ the States indicated in
the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf
of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

BILL, Kevin
Global Intellectual Property
AstraZeneca UK Limited
Mereside, Alderley Park, Macclesfield
Cheshire. SK10 4TG - GB

Telephone No.

+44-1625-512461

Facsimile No.

+44-1625-583358

Teleprinter No.

669095/669388

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

GIBSON, Neil James
Gadbrook Park
Northwich
Cheshire GB

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:
GB

State (that is, country) of residence:
GB

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

WHITCOMBE, David Mark
Gadbrook Park
Northwich
Cheshire GB

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:
GB

State (that is, country) of residence:
GB

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

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This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a)(mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP ARIPO Patent:** GHGhana, GMGambia, KEKenya, LSLesotho, MWMalawi, SDSudan, SZSwaziland, UGUganda, ZWZimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA Eurasian Patent:** AMArmenia, AZAzerbaijan, BYBelarus, KGKyrgyzstan, KZKazakhstan, MDRepublic of Moldova, RURussian Federation, TJTajikistan, TMTurkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
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| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
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| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
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| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | |
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Precautionary Designation Statement: In addition to the designations made above the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:* regional Office	international application: receiving Office
item (1) 11/02/1999 (11Feb1999)	9902970.4	GB		
item (2)				
item (3)				
<input checked="" type="checkbox"/> The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s) (1)				
<small>* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.</small>				
Box No. VII INTERNATIONAL SEARCHING AUTHORITY				
Choice of International Searching Authority (ISA) <small>(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):</small>		Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority): Date (day/month/year) Number Country (or regional Office)		
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Box No. VIII CHECK LIST; LANGUAGE OF FILING				
This international application contains the following number of sheets: request : 4 description (excluding sequence listing part) : 45 claims : 4 abstract : 1 drawings : 4 sequence listing part of description : 2 Total number of sheets : 60		This international application is accompanied by the item(s) marked below: 1. <input checked="" type="checkbox"/> fee calculation sheet 2. <input checked="" type="checkbox"/> separate signed power of attorney 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: 4. <input type="checkbox"/> statement explaining lack of signature 5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material 8. <input checked="" type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input type="checkbox"/> other (specify):		
Figure of the drawings which should accompany the abstract:		Language of filing of the international application: English		
Box No. IX SIGNATURE OF APPLICANT OR AGENT				
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).				
				
BILL, Kevin AGENT FOR APPLICANT				

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1. Date of actual receipt of the purported international application:	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	
6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PHM 70478/WO	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 00357	International filing date (day/month/year) 08/02/2000	(Earliest) Priority Date (day/month/year) 11/02/1999
Applicant ASTRAZENECA UK LIMITED		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☒ contained in the international application in written form.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

OLIGONUCLEOTIDE ARRAY AND METHODS OF USE

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/00357

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 31256 A (BLOK HERMAN ;BARANY GEORGE (US); KEMPE MARIA (US); ZIRVI MONIB (US) 28 August 1997 (1997-08-28) see whole doc. esp. claim 13 ---	1-5
X	EP 0 799 897 A (AFFYMETRIX INC) 8 October 1997 (1997-10-08) see whole doc., esp. claims 10,11 ---	1-5
Y	GB 2 312 747 A (ZENECA LTD) 5 November 1997 (1997-11-05) the whole document ---	6-16
Y	EP 0 416 817 A (ICI PLC) 13 March 1991 (1991-03-13) cited in the application see whole doc. esp. claims ---	6-16
-/--		

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

31 May 2000

Date of mailing of the international search report

07/06/2000

Name and mailing address of the ISA

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Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

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Müller, F

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/00357

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 93 25563 A (HOPE CITY ; WALLACE ROBERT BRUCE (US)) 23 December 1993 (1993-12-23) see whole doc. esp. claims and figures ---	6-16
A	OLD J M: "DETECTION OF MUTATIONS BY THE AMPLIFICATION REFRACTORY MUTATION SYSTEM (ARMS)" METHODS IN MOLECULAR BIOLOGY, US, HUMANA PRESS INC., CLIFTON, NJ, vol. 9, 1991, pages 77-84, XP000775640 the whole document -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/00357

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9731256	A	28-08-1997	AU 2799797 A CA 2244891 A EP 0920440 A	10-09-1997 28-08-1997 09-06-1999
EP 0799897	A	08-10-1997	NONE	
GB 2312747	A	05-11-1997	AU 2704997 A EP 0896630 A WO 9742345 A	26-11-1997 17-02-1999 13-11-1997
EP 0416817	A	13-03-1991	AT 144290 T AU 622349 B AU 6118490 A DE 69028891 D DE 69028891 T GB 2235689 A,B JP 3272686 A NZ 235015 A US 5525494 A	15-11-1996 02-04-1992 14-03-1991 21-11-1996 13-03-1997 13-03-1991 04-12-1991 26-03-1992 11-06-1996
WO 9325563	A	23-12-1993	CA 2115342 A AU 674127 B AU 2251192 A EP 0607151 A JP 6509946 T US 5981176 A	23-12-1993 12-12-1996 04-01-1994 27-07-1994 10-11-1994 09-11-1999

INTERNATIONAL SEARCH REPORT

Inter national Application No

PCT/GB 00/00357

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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-/-		

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Date of the actual completion of the international search

31 May 2000

Date of mailing of the international search report

07/06/2000

Name and mailing address of the ISA

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Müller, F

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/00357

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/00357

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
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			CA	2244891 A	28-08-1997
			EP	0920440 A	09-06-1999
EP 0799897	A	08-10-1997	NONE		
GB 2312747	A	05-11-1997	AU	2704997 A	26-11-1997
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EP 0416817	A	13-03-1991	AT	144290 T	15-11-1996
			AU	622349 B	02-04-1992
			AU	6118490 A	14-03-1991
			DE	69028891 D	21-11-1996
			DE	69028891 T	13-03-1997
			GB	2235689 A,B	13-03-1991
			JP	3272686 A	04-12-1991
			NZ	235015 A	26-03-1992
			US	5525494 A	11-06-1996
WO 9325563	A	23-12-1993	CA	2115342 A	23-12-1993
			AU	674127 B	12-12-1996
			AU	2251192 A	04-01-1994
			EP	0607151 A	27-07-1994
			JP	6509946 T	10-11-1994
			US	5981176 A	09-11-1999